

# 2015 ILRS Technical Workshop

## 2.9 The COPERNICUS Sentinel-3 mission

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The Sentinel-3 mission is part of Copernicus, the European Programme for the establishment of European capacity for Earth observation. The mission will be jointly operated by ESA and EUMETSAT to deliver operational ocean and land observation services. A main driver for the definition of the mission was to assure the continuity in provision of ERS, ENVISAT and SPOT vegetation data.

The first satellite Sentinel-3A is expected to be launched in December 2015. In addition to the main payloads namely the SAR Radar Altimeter, the Ocean and Land Colour Instrument, the Microwave Radiometer and the Sea and Land Surface Temperature Radiometer the satellite carries a GPS receiver, a Laser Retro Reflector (LRR), and a DORIS receiver for precise orbit determination. Observations from all three techniques are equally important to fulfil the stringent orbit accuracy requirements of 2-3 cm in radial direction.

Satellite Laser Ranging (SLR) is a key technique to calibrate the GPS and DORIS instrument and the overall POD processing chain. With the demanding accuracies of an altimetry mission like Sentinel-3, SLR is needed primarily during the commissioning phase but also during the routine phase (Sentinel-3 is an operational mission!), to perform periodic checks of the biases that could exist between different tracking techniques.

Strong support from the ILRS community is therefore needed and very much appreciated.

This paper will present the status of the mission, including the expected launch date, duration and activities to be performed during the commissioning phase, where the support of the ILRS community would be very much appreciated. Then the characteristics of the SLR instrument and constraints of the mission are described, with a particular emphasis on constraints posed by the sensibility of the instruments on-board Sentinel-3.

Finally the liaison between Sentinel-3 mission and ILRS is discussed, with a particular emphasis on presenting the role of the Copernicus Precise Orbit Determination (POD) Service, a GMV-led consortium being in charge of generating precise orbital products and auxiliary data files not only for Sentinel-3 but also Sentinel-1 and -2, and which will be in charge of computing and delivering the CPF orbit files to the ILRS community and will be a main user of the SLR measurements to compute the precise orbital products of Sentinel-3, which are later used to support the altimetry instrument.